

REMARKS

I. Status of the Application

Claims 1-2 are pending in the application. None of the claims have been cancelled.

Initially, in the drawings, it was requested that FIGs 1 and 2 be designated as “PRIOR ART.” Applicants are submitting replacement sheets, including these designations. No new matter is being submitted with these replacement sheets.

In the Office Action, the Examiner rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,811,903 to Ueno et al (“Ueno”) in view of U.S. Patent No. 7,086,303 to Matsushita (“Matsushita”). The Examiner is also rejecting claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of U.S. Patent No. 6,317,287 to Yano et al. Applicants respectfully traverse these rejections.

In view of the Remarks herein, Applicants believe the present application is in condition for allowance and respectfully request notice of same.

Ueno

Ueno discloses a motor comprising a motor rotation shaft, a first thrust bearing which supports one end of the motor rotation shaft and a second thrust bearing which supports the other end of the motor rotation shaft to control position in a thrust direction of the motor rotation shaft. (Col. 2, lines 1-6). Ueno further discloses a plate 9 having three spring elements 9a to oppose the force generated by bearing 7 in the thrust direction (Col. 4, lines 24-31).

Matsushita

Matsushita discloses a lead screw for a linear actuator having a resin-molded thread (Col. 2, lines 27-31). The lead screw includes a metal pipe having a thread which is a resin-molded helical projection formed on the outer surface of the metal pipe (Col. 3, lines 51-56). The interior of the pipe is filled with resin material (Col. 3, lines 58-61). A ball is welded to the distal end of the pipe (Col. 3, lines 65-66).

Yano

Yano discloses a motor with a lead screw with a pre-load generating member for canceling backlash in the axial direction. (Abstract). Yano includes a compression coil spring 9 incorporated into a blind hole 5c within the right portion of the lead screw 5 (Col. 8, lines 14-21).

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A rod-shaped member 10 is inserted into the blind hole next to the compression spring (Col. 8, lines 21-26). In this manner, the sufficient stoke of the compression spring can be maintained, thereby assuring stability of the pre-load mechanism (Col. 8, lines 36-41).

Rejections

In the Office Action, the Examiner rejected claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Matsushita. Claims 1 and 2 are also being rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Yano. Applicants respectfully submit that their invention is patentable over the combination of references.

Such reasoning for combining the above prior art references, however, does not meet the standard set forth by the Supreme Court in *KSR v. Teleflex*. In *KSR*, the Supreme Court stated that a rejection of a patent claim on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support a legal conclusion of obviousness. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007). Contrary to the requirements of *KSR*, the Examiner has merely put forth conclusory statements for the combination. The Examiner has not provided specific reasoning to support the alleged combinations listed above, and thus has failed to present a *prima facie* case of obviousness.

Initially, it should be noted that the present application, as defined by claim 1 has a thrust mechanism, comprised of a resilient member (26) and a point-contact member (27) disposed in the tip of the lead screw of the rotary shaft for applying a preload to the rotary shaft (FIG. 3). The tip portion of the lead screw is out of an apart from the stator assembly (9) and (12), and thus the components of the thrust mechanism are kept free from the influences of the heat radiated by the coils (8) and (11) within the stator assembly.

It is noted in the Office Action that “Ueno does not teach that the thrust mechanism (thrust bearing) 5 is ‘structured such that a resilient member is provided in [the] recess.’” With regard to claims 1 and 2, the first basis for making the proposed combination asserted by the Examiner is that “it would have been obvious to modify Ueno and provide a resilient member in the shaft recess per Matsushita since this would have prevented the problem in the lead screw’s pitch characteristics.” (Office Action, p. 4). Notably, the discussion of Matsushita relied upon

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by the Examiner on page 4 of the Office Action references the prior art cited in the Description of the Prior Art in Matsushita, not to the disclosure of Matsushita. However, even if the disclosure of Matsushita was properly applied, it does not disclose a resilient member provided in a recess and a point-contact member that make up the thrust mechanism of the present invention. Additionally, Matsushita discloses use of a resin, which typically has no resiliency, and therefore is not able to apply sufficient preload to the rotary shaft, as described in the present invention. Therefore, the addition of Matsushita does not make up for the deficiency of Ueno.

Furthermore, claim 2 depends from claim 1 and ultimately includes all of its limitations. Therefore, the present invention is patentable over the combination of Ueno and Matsushita.

Claims 1 and 2 are being rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Yano. Applicants respectfully submit that their invention is patentable over the combination of references.

It is noted in the Office Action that “Ueno does not teach that the thrust mechanism (thrust bearing) 5 is ‘structured such that a resilient member is provided in [the] recess,’ such that point-contact member is ‘provided between the resilient member and one bearing of the respective bearings . . . wherein thrust force is given by the resilient member to the rotary shaft in an axial direction.’” Thus, the Examiner states that it would have been “obvious to modify Ueno and provide a resilient member in the recess of the lead screw per Yano since the resilient member would have preloaded the lead screw and canceled backlash.” (Office Action, p. 5).

However, the structure of Yano referred to by the Examiner, specifically the compression spring 9 provided in the recess 5c in the lead screw shaft 5 (FIG. 1), and the road-shaped member 10 next to the compression spring, are all disposed within the stator at the end portion of the rotary shaft. Furthermore, Ueno already discloses use of a plate 9 constructed with three spring elements 9a (Ueno, Col. 4, lines 24-26), also located with the stator portion of the rotary shaft. Therefore, the addition of Yano does not make up for the deficiencies of Ueno to arrive at the present invention.

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CONCLUSION

In light of the foregoing reasons, Applicants respectfully request reconsideration and allowance of claims 1-2. The Commissioner is authorized to charge any additional fees or credit any overpayments associated with this Amendment to Deposit Account 13-0206. Applicants further invite the Examiner to contact the undersigned representative at the telephone number below to discuss any matters pertaining to the present Application.

Respectfully submitted,

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